

**DEMAND CONTROL VENTILATION SYSTEMS ACCEPTANCE**

CEC-NRCA-MCH-06-A (Revised 01/19)

CALIFORNIA ENERGY COMMISSION



<b>CERTIFICATE OF ACCEPTANCE</b>		<b>NRCA-MCH-06-A</b>
<b>Demand Control Ventilation Systems Acceptance</b>		<b>(Page 1 of 3)</b>
Project Name:	Enforcement Agency:	Permit Number:
Project Address:	City:	Zip Code:
System Name or Identification/Tag:	System Location or Area Served:	

Compliance Results: Radio-Button ("Complies" or "Does Not Comply")	Enforcement Agency Use: Checked by/Date
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<b>Intent:</b>	Verify that systems required to employ Demand Controlled Ventilation (refer to <a href="#">§121(d)3</a> ) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO <sub>2</sub> ) concentration setpoints. NOTE: Submit one Certificate of Acceptance for <u>each CO2 sensor</u> in the system that must demonstrate compliance.
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<b>A. Construction Inspection</b>			
Building:	Floor:	Room/Area/Zone:	Control/System:
Prior to Functional Testing, verify and document the following:			
1.	Required Documentation (check <b>all</b> of the following)		
<input type="checkbox"/>	a.	<a href="#">NRCC-MCH-03-A</a> as approved by the authority having jurisdiction.	
<input type="checkbox"/>	b.	Factory Calibration Certificate(s)	
<input type="checkbox"/>	c.	Compliant <a href="#">NRCA-MCH-02-A</a> (maybe conducted concurrently)	
2.	CO2 control sensor is factory calibrated as specified by <a href="#">§120.1(d)4</a> . ( <a href="#">NA7.5.5.1(a)</a> )		
<input type="checkbox"/>	a.	Factory Calibration Certificate(s) shows (check <b>all</b> of the following):	
<input type="checkbox"/>	i.	Sensor is accurate to within plus or minus 75 ppm at a 600 and 1000 ppm concentration when measured at sea level and 25°C. ( <a href="#">§120.1(d)4F</a> )	
<input type="checkbox"/>	ii.	Sensor is certified by the manufacturer to require calibration no more frequently than once every 5 years. ( <a href="#">§120.1(d)4F</a> )	
<input type="checkbox"/>	iii.	Upon detection of sensor failure, the system must provide a signal which resets the system to supply the minimum quantity of outside air to levels indicated by approved design ( <a href="#">NRCC-MCH-03-A (column 14)</a> , <a href="#">§120.1(c)3</a> ). ( <a href="#">§120.1(d)4F</a> )	
<input type="checkbox"/>	iv.	<b>IF</b> the system includes Direct Digital Control, <b>then</b> the CO2 sensor(s) reading for each zone must be displayed continuously, and recorded. ( <a href="#">§120.1(d)4G</a> )	
3.	Sensor Location within each zone.		
<input type="checkbox"/>	a.	Each sensor is located in the high density space between 3 ft and 6 ft above the floor or at the anticipated level of the occupants' heads. ( <a href="#">NA7.5.5.1(b)</a> , <a href="#">§120.1(d)4B</a> )	
4.	DCV control setpoint is at or below the CO2 concentration permitted (check <b>all</b> of the following)		
<input type="checkbox"/>	a.	Demand ventilation controls maintain CO2 concentrations less than or equal to 600 ppm plus the outdoor air CO2 concentration in all rooms with CO2 sensors. ( <a href="#">§120.1(d)4C</a> )	
<input type="checkbox"/>	b.	The outdoor air ventilation rate is not larger than the approved outdoor air ventilation design rate ( <a href="#">NRCC-MCH-03-A (column 14)</a> , <a href="#">§120.1(c)3</a> ) regardless of CO2 concentration. ( <b>Exception to</b> <a href="#">§120.1(d)4C</a> )	
5.	Outdoor air CO2 concentration are determined by one of the following: (check <b>one</b> of the following)		
<input type="checkbox"/>	a.	The system assumes that CO2 concentrations are 400 ppm. ( <a href="#">§120.1(d)4Di</a> )	
<input type="checkbox"/>	b.	CO2 concentrations are dynamically measured using a CO2 sensor located within 4 ft of the outdoor air intake. ( <a href="#">§120.1(d)4Dii</a> )	
6.	CO2 sensor installation requirements (check <b>all</b> of the following)		
<input type="checkbox"/>	a.	CO2 sensors are installed to no less than one sensor per 10,000 ft <sup>2</sup> area in a zone or space. ( <a href="#">§120.1(d)4A</a> )	
<input type="checkbox"/>	b.	<b>IF</b> a zone or a space is served by more than one sensor, <b>then</b> sensors must be configured such that a signal from any sensor indicating that CO2 is near or at the setpoint within the zone or space will trigger the system to increase ventilation. ( <a href="#">§120.1(d)4A</a> )	
Construction Inspection Compliance Results: Radio-Button ("Complies" or "Does Not Comply")			

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<b>B. Functional Testing</b>			
Building:	Floor:	Room/Area/Zone:	Control/System:
Step			Results
1	Passing this functional test verifies the install CO2 sensor complies with <a href="#">§120.1(d)4E</a> .		
a.	Prior to functional testing, record the following:		
b.	Disable economizer controls. ( <a href="#">NA7.5.5.2(Step 1)</a> )		
b.	Record outside air CO2 concentration from dynamic measurement <b>or</b>		ppm
b.	Assume outside air concentration if dynamic measure is not include with the system		400 ppm
c.	Record interior CO2 concentration setpoint (may not exceed Step 1b + 600 ppm) ( <a href="#">§120.1(d)4C</a> )		ppm
2	Simulate a signal at or slightly above the CO2 concentration setpoint required (Step 1c). ( <a href="#">NA7.5.5.2(Step 2)</a> )		
a.	Apply CO <sub>2</sub> calibration gas at a concentration at or slightly above the setpoint to the sensor.		ppm
b.	For single zone units, verify that the outdoor air damper modulates open to satisfy the total ventilation air called for in the Certificate of Compliance. If a compliant <a href="#">NRCA-MCH-02-A</a> has been completed any open setting above minimum is acceptable, otherwise measure outdoor air flow and refer to <a href="#">NRCC-MCH-03-A</a> . ( <a href="#">NA7.5.5.2(Step2a)</a> )		P/F/NA
c.	For multiple zone units, the zone damper (or outdoor air damper when applicable) modulates open to satisfy the zone ventilation requirements. If a compliant <a href="#">NRCA-MCH-02-A</a> has been completed any open setting above minimum is acceptable, otherwise measure outdoor air flow and refer to <a href="#">NRCC-MCH-03-A</a> for the sum of all zones served. ( <a href="#">NA7.5.5.2(Step2b)</a> )		P/F/NA
3	Simulate signal well below the CO2 setpoint.		
a.	Apply CO <sub>2</sub> calibration gas at a concentration well below the setpoint to the sensor or ventilate the sensor as necessary.		ppm
b.	For single zone units, outdoor air damper modulates to the design minimum value. If a compliant <a href="#">NRCA-MCH-02-A</a> has been completed any open setting including minimum is acceptable, otherwise measure outdoor air flow and refer to <a href="#">NRCC-MCH-03-A</a> . ( <a href="#">NA7.5.5.2 (Step3a)</a> )		P/F/NA
c.	For multiple zone units, the zone damper (or outdoor air damper when applicable) modulates to satisfy the reduced zone ventilation requirements. If a compliant <a href="#">NRCA-MCH-02-A</a> has been completed any open setting including minimum is acceptable, otherwise measure outdoor air flow and refer to <a href="#">NRCC-MCH-03-A</a> for the sum of all zones served. ( <a href="#">NA7.5.5.2 (Step 3b)</a> )		P/F/NA
4	Verify DCV operation with economizer		
a.	Restore economizer controls and remove all system overrides initiated during the test. ( <a href="#">NA7.5.5.2 (Step 4)</a> )		
b.	Apply CO2 calibration gas at a concentration slightly above the setpoint to the sensor. ( <a href="#">NA7.5.5.2 (Step 5)</a> )		ppm
c.	Verify that the outdoor air damper modulates open to satisfy the total ventilation air called for in the Certificate of Compliance. If a compliant <a href="#">NRCA-MCH-02-A</a> has been completed any open setting above minimum is acceptable, otherwise measure outdoor air flow and refer to <a href="#">NRCC-MCH-03-A</a> for the sum of all zones served. ( <a href="#">NA7.5.5.2 (Step 5)</a> )		P/F
5	Remove all system overrides initiated during the test and return system to normal operation.		
Functional Testing Compliance Results: AUTOMATIC ("Complies" or "Does Not Comply")			

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<b>DOCUMENTATION AUTHOR'S DECLARATION STATEMENT</b>		
1. I certify that this Certificate of Acceptance documentation is accurate and complete.		
Documentation Author Name:	Documentation Author Signature:	
Documentation Author Company Name:	Date Signed:	
Address:	ATT Certification Identification (If applicable):	
City/State/Zip:	Phone:	
<b>FIELD TECHNICIAN'S DECLARATION STATEMENT</b>		
I certify the following under penalty of perjury, under the laws of the State of California:		
<ol style="list-style-type: none"> <li>1. The information provided on this Certificate of Acceptance is true and correct.</li> <li>2. I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician).</li> <li>3. The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.</li> <li>4. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building.</li> </ol>		
Field Technician Name:	Field Technician Signature:	
Field Technician Company Name:	Position with Company (Title):	
Address:	ATT Certification Identification (if applicable):	
City/State/Zip:	Phone:	Date Signed:
<b>RESPONSIBLE PERSON'S DECLARATION STATEMENT</b>		
I certify the following under penalty of perjury, under the laws of the State of California:		
<ol style="list-style-type: none"> <li>1. I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance.</li> <li>2. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance and attest to the declarations in this statement (responsible acceptance person).</li> <li>3. The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.</li> <li>4. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building.</li> <li>5. I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.</li> </ol>		
Responsible Acceptance Person Name:	Responsible Acceptance Person Signature:	
Responsible Acceptance Person Company Name:	Position with Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone:	Date Signed: